Questioned by Dr. Haywood. Dr. HAYWOOD-I would like to ask the gentleman who has just been speak-

a gas manufacturer? Mr. FORSTALL-in a small way. I teen years were between 400 and 500? am the manager of a gas plant that makes about 5,000,000 feet a year just at present, but my business is consulting

or Dr. HAYWOOD—Are you a chemist? Dr. HAYWOOD--Would you call yourmyself an analytical chemist.
Dr. HAYWOOD—Have you ever stud-led physiological chemistry?

Mr. FORSTALL-No. Neither Sanitarian Nor M. D. Dr. HAYWOOD-Have you ever been

n sanitarian? Mr. FORSTALL-No. Dr. HAYWOOD-Are you an M. D.? Mr. FORSTALL-No.

Dr. HAYWOOD-Not being any of these, do you consider that you are believe competent to pass on whether carbon those nonoxide in a certain quantity is or is

poisonous? r. FORSTALL-I have not tried to pass on that. I have acknowledged that carbon monoxide is poisonous. Dr. HAYWOOD—I know; but the relaive quantities of water gas and coal as, you have said that one will produce eath and one will not. Have you ever arried out any experiments to prove

Did Not Make Statement.

Mr. FORSTALL-I beg pardon; I did not say that one would produce death and one would not. Dr. HAYWOOD-In a certain length

Mr. FORSTALL-Yes; I said that. Dr. HAYWOOD-Have you ever car

Mr. FORSTALL—No.
Dr. HAYWOOD—Where do you draw Dr. HAYWOOD-Tell me some of the

Dr. HAYWOOD-Were Sir William

Ramsay and Haldane two of the men who signed it?

Mr. FORSTALL—They were.

Mr. FORSTALL—The tendency is regulate them, is it not?

Mr. FORSTALL—The tendency is regulate everything just at present, regulate everything just at present.

SIMS—The doctor was not here, iid not know that.

HAYWOOD—Do you remember Dr. HAYWOOD—Do you remember that that committee recommended to parliament that 12 per cent of carbon menoxide should be a maximum in the mr. TAYLOR—Do you mean what ef-

FORSTALL—I do not.

HAYWOOD—What did item No.
in regard to that?
FORSTALL—Item No. 5, if that

FORSTALL—item No. 5, if that is the itemread into the record yesterday. Limit on Monoxide Urged.

Mr. FORSTALL-I read that into the record yesterday. Item No. 5 says: That power should be conferred upon a central department to make regulations, enforceable by adequate penalties, limiting the proportion of carbonic oxide in the public gas supply at night to 12 per cent, or such greater amount as the department may consider desirable.

Dr. HAYWOOD-That is all I wanted to know if you read that report very carefully. You quoted some figures there about the deaths in Chicago being

there about the deaths in Unicago being four and some fraction when coal gas was used, and three and some fraction when water gas was used, did you not?

Mr. SKINNER-swered the quest on the company. deaths rise when you use water them just about the same.

Mr. FORSTALL-By Drs. Sedgwick 29

Mr. FORSTALL—By Drs. Sedgwick and Nichols?

Dr. HAYWOOD—Yes.

Mr. SKINNER—We will assume 30, because I think the authorities say about that they put certain animals in a room of about 790 cubic feet, let a much do you say coal gas runs?

6-foot burner run in that room, and with coal gas, at the end of eight hours hower gas, at the end of eight hours they were gractically all dead?

Mr. SKINNER—That would make it 14, twice that 29 times. That would give them 24 to start with. How much do you say coal gas runs?

Mr. FORSTALL—Five to 8, I should say 7 is an average of 14. Assuming that it was an a half hours, the animals commenced to die, and at the end of eight hours they were practically all dead?

Mr. FORSTALL—I am aware of those experiments, yes.

Dr. HAYWOOD—How do you, then, That would not that individed the condition of the oven been in the past which bears on this question.

Mr. SKINNER—We will assume 20, between the dame burning that the gas pressure was solong at the fill and the own that the flame burning that the gas pressure was only by its prompt discovery that a series on, but not burning. On commended to the gas range in which our evening meal was being cooked went out entirely, and it in the gas range in which our evening meal was being cooked went out entirely, and it in the gas range in which our evening meal was being cooked went out entirely, and it in the gas range in which our evening meal was being obtained the oven with the gas range in which our evening meal was only by its prompt discovery that a series on this question.

Mr. SKINNER—That the authorities say about that it it is a series of the start with. How much do you said that the gas range in which our evening meal was only by its prompt discovery that a series of the gas range in which our evening meal was only by its prompt discovery that a series of the gas range on the file of the say of the file of the say of the file of the sa

from water gas than there would from coal gas?

than that, and say from my general knowledge of the business that it is obvious that two separate works that are making 20 per cent of coal gas and 80 per cent of carburefed water gas campot be économically turned into a works that are said, that the coal gas would have killed in practice of the seconomic reasons, abandoned if the gas had to be all coal gas.

Yr. THOMAS—But you have made no valuation of the part of the works that you have be abandoned?

Wr. FORSTALL—No, sir.

Reports Not in Library.

Mr. FORSTALL—All these investigation that the same will have a letter from Daniel Miller, and the same are such that the gas with the coal gas.

Though the coal gas and 80 to such that the gas with the coal gas would have killed in practice of exposure were such that the gas with the coal gas would have killed in practice of exposure were such that the gas with the coal gas would have killed in practice of exposure were such that the gas with the coal gas would have killed in practice of exposure were such that the gas with the coal gas would have killed in practice of exposure were such that the gas with the coal gas and 40 to any own that the gas with the coal gas and 40 to any own that the gas with the coal gas and 40 to any own that the gas with the coal gas and 40 to any own that the gas with the coal gas and 40 to any own that the coal gas would have killed in practice of exposure were such that the gas with the coal gas and 40 to any own that the coal gas and 40 to any own that the coal gas and 40 to any own that the coal gas and 40 to any own the being water gas?

Wr. THOMAS—But you have made no valuation of the part of the works that the conditions of exposure were such that the gas with the coal gas and 40 to any own the being water gas?

Wr. THOMAS—But you have made no valuation of the part of the works that the coal gas and 40 to any own the being water gas?

Wr. THOMAS—But you have made no valuation of the part of the works that the coal gas and 40 to any own the being water gas in the room and tho fou

Reports Not in Library.

Mr. FORSTALL—All these investigations to which Commissioner Barker

Told to Follow Experts.

Mr. MOORE—I would like to asking the annual reports of the board of gas and electric light commissioners of Massachusetts. I have tried, after I came down here, to get these reports, but the Congressional Library.

Mr. HOORE—I would like to asking and it is the final questfon, so that we have the composition of mind—will your mattention, officially, to the unsatisfactory condition of the gas server. We experience difficulty in securing adequate pressure, especially, between 5 and 8 p. m., during which they are all the securing adequate pressure, especially between 5 and 8 p. m., during which they are all the securing adequate pressure, especially between 5 and 8 p. m., during which they are all the securing adequate pressure, especially between 5 and 8 p. m., during which they are all the securing adequate pressure, especially between 5 and 8 p. m., during which they are the security in securing adequate pressure, especially between 5 and 8 p. m., during which they are the security in securing adequate pressure, especially between 5 and 8 p. m., during which they are the security in securing adequate pressure, especially between 5 and 8 p. m., during which they are the security in securing adequate pressure, especially between 5 and 8 p. m., during which they are the security in securing adequate pressure, especially between 5 and 8 p. m., during which they are the security in securing adequate pressure, especially between 5 and 8 p. m., during which they are the security in securing adequate pressure, especially between 5 and 8 p. m., during which they are the security in securing adequate pressure, especially in securing adequate pressure, especially the securing adequate pressure, especially in securing adequate pressure, especially in securing adequate pressure, especially.

Mr. TAYLOR—Possibly the security in securing adequate pressure, especially in securing adequate pressure, especially t

Dr. HAYWOOD—Suppose I were to tell you that the House wrote to the board of health of Massachusetts and asked them to answer certain questions in the more it would cost, more per caadlepower to make a straight coal gas than it does to that, the whole board of health of massachusetts signed this letter in answer to that, the whole board of health of massachusetts signed this letter in answer to that, the whole board of health of massachusetts signed this letter in answer to that, the whole board of health of massachusetts signed this letter in answer to that, the whole board of health of massachusetts there were going to make a straight coal gas than it does to make a straight carbureted water gas, and said that, in the thirteen years before the introduction of water gas, and such that, in the thirteen years after water gas into Massachusetts there were going to the same caustopower in each thing gas polsoning in Massachusetts there were going to the termendous number of gas and discovered the burner had not been turned off when the gas went of about 5:39 p. m. The cock failed to turn off the burner under the bulker of the same caustopower in each the color of gas and discovered the burner had not been turned off when the gas went off and discovered the burner had not been turned off when the gas went off and discovered the burner had not been turned off when the gas went of about 5:39 p. m. The cock failed to turn off the burner under the bulker of the committee, and swell as extremely dangerous.

Now, Mr. Chairman and members of the committee, in the burner last of the committee, as went it, our content to the turn off the burner under the bulker of the committee, as went of about 5:39 p. m. The cock failed to turn off the burner under the bulker of the committee, there is a letter from the burner last of the committee, as went of about 5:39 p. m. The cock failed to turn off the burner will have the pressure of the committee, as the committee, the committee in the burner under the bulker of the committee, the ing a question. Did you say you were

FORSTALL-From the literature know whether the speed is regulated,

Tendency Toward Regulation

Mr. FORSTALL—This report of the departmental committee of the board of trade has more in it than any other publication.

Dr. HAYWOOD—Is that of 1839?
Mr. FORSTALL—1899.
Dr. HAYWOOD—You mean the house of commons sessional papers?
Mr. FORSTALL—I do not know what they call it; it is diven here as the report of the departmental committee.

Read Report Through.

Dr. HAYWOOD—Have you ever read that through?

Mr. FORSTALL—Yes.

Mr. FORSTALL—Yes.

Mr. FORSTALL—Yes.

Mr. FORSTALL—Yes.

Mr. FORSTALL—Yes.

Tendency Toward Regulation

Mr. SKINNER—Is it not true that the tendency is nowadays to regulate also high motive electric currents by putting them underground, and in other ways, to make them safer?

Mr. FORSTALL—If putting them under stone is increased number of deaths, had other things remained equal. The constant the gas business has been in the gas sold per inhabitant. That is true that the tendency is nowadays to regulate also high motive electric currents by putting to increase the amount of gas sold per inhabitant. That is true that the toincrease the number of deaths, had other things remained equal. The constant things remained equal. The constant things remained equal. The constant the case that the gas business has been in the object which is intended to increase the number of the department of increase the number of the department of the case that the tendency is nowadays to regulate also high motive electric currents by putting to increase the number of the department of the case that the data the case that the dead to increase the number of the department of the case that the data the case that the data the case that the department of the case that the data the case that the department of the case that the data the case that the department of the case that the data that the data the case that the data that the data the Tendency Toward Regulation

Mr. FORSTALL—Yes.
Mr. SKINNER—The tendency is to

Mr. FORSTALL-You asked me what

Insists on a Reply.

Must Have Lower Percentage. Either Gas Would Have Killed.

Mr. FORSTALL—No; I do not think that the carbureted water gas of the candlepower that the Washington Gasgations of the actual deaths of human light. Cover that the Washington Gas-Mr. FORSTALL—I say that investigations of the actual deaths of human beings from exposure to gas poisoning have shown, and the gentleman who all I tried to do; but I car go further than that, and say from my general than any other one man in the world the washington Gas
Iight Company must make to have their average candlepower continuously about twenty-two would have 30 per cent of carbon monoxide in it. I do also a scientist in the Department of Agriculture. It is quite an agricultural community out there.

Mr. Shoemaker and the world the wo

Dr. HAYWOOD—Do you know who there are; the committee are by whom it is signed?

Mr. FORSTALL—I presume there are; there are in all cities I know of.

Mr. FORSTALL—Yes; I gave their many yesterday.

Not the Case in Chicago.

Mr. FORSTALL—That I do not think they as complained repeated until about 6:15.

Mr. FORSTALL—That I do not think would hold in Chicago. I am rather familiar with the circumstances in Chicago.

Mr. FORSTALL—I presume there are; there are in all cities I know of.

Mr. FORSTALL—That I do not think would hold in Chicago. I am rather familiar with the circumstances in Chicago.

Mr. FORSTALL—That I do not think they as complained expectation from the case in Chicago.

Mr. FORSTALL—That I do not think they as complained expectation from the case in Chicago.

Mr. FORSTALL—That I do not think they are sent men who looked at the meter and put in some new gas tips. This unsatisfactory condition has existed since the last of Octo-Chicago, and I do not think they have ber. Mr. SKINNER—The tendency is to regulate them, is it not?

Mr. FORSTALL—The tendency is to There are some cities where that would hold. There are some cities that have made ture, says:

David Griffiths, who is one of the scientists in the Department of Agriculture, says:

monoxide has run higher than 30. What percentage of soal gas would you think was in that?

Mr. FORSTALL—Higher than 30? I would not say there was any percentage of coal gas; I would say there was a large error in the analysis.

Mr. SKINNER—That is a question for others to decide.

Mr. FORSTALL—Higher than 30? I would say there was a large error in the analysis.

Mr. SKINNER—That is a question for others to decide.

Mr. FORSTALL—Deaths due to that way.

Mr. FORSTALL—Deaths due to that cause are a very, very small percentage of the deaths due to gas poisoning, so it seems to me that the improvements of a blinness of the drain on the others to decide.

Mr. FORSTALL—Vou asked me what

Statement of J. A. Le Clerc. Mr. TAYLOR-Mr. Le Clerc, we will

Mr. SKINNER-You have not an- Mr. LE CLERC-Mr. Chairman, I swered the question about the effect represent the Citizens' Association of pany? on the company.

Takoma Park, and I am not here to
Mr. Le CLERC-I think we generally
take up the question of carbon montonsider it five or six miles from the which show exactly the opposite, that the deaths rise when you use water gas?

Mr. FORSTALL—No; I have not in my statement. I stated yesterday—quoted this table of Dr. Haldane, by which he pretends to show that the deaths had increased greatly with the use of carbureted water gas, and I gave my reasons why I thought that table was not worth very much.

Asks of Massachusetts Tests.

Dr. HAYWOOD—I was not there. I am very much obliged to you for telling me that. The other thing I wanted to ask you about is this; Are you familiar with the experiments that were carried on in 1884 in Massachusetts?

Mr. FORSTALL—Anywhere from 25 to 29.

Mr. FORSTALL—By Drs. Sedgwick and Nicols? oxide in gas at all, but, realizing, city. I do not know where the main

explain your contention that you do cate that the analyses were correct, the Department of Agriculture, sent to not think there would any more deaths from what you have already testified. Within the past two weeks all the gaslight

Mr. FORSTALL—The tendency is to regulate everything just at present,

Effect of Limitation.

Mr. SKINNER—One other question. If the limit in this bill were raised to 26 per cent monoxide, what effect would that have?

Mr. TAYLOR—Do you mean what effect it would have upon the gas, or upon the besiness?

Mr. SKINNER—I mean upon the company.

Mr. FORSTALL—Twenty per cent would leave them just about where they are now. I think the percentage of carbon monoxide in the gas runs along about 21.

Mr. SKINNER—Well, one other questions of the carbon monoxide has run higher than 20. What percentage of social gas would you think was in that?

Mr. FORSTALL—Deaths due to that would hold. There are some cities that have made a very large increase in the gas used for industrial purposes, but I do not think in Chicago it has cut very much figure.

Mr. SHAW—What about the possible improvement in appliances?

Mr. FORSTALL—Well, Mr. Shaw, the statistics show that practically all portions of the bouse. One evening, one in this particular case in Washington it was a question of the appliance.

Defects Seldom to Blame.

Mr. SHAW—That was what I have in the gas used for industrial purposes, but I do not think in Chicago it has cut very much figure.

Mr. SHAW—What about the possible improvement on both think in Chicago it has cut very much figure.

Mr. FORSTALL—Well, Mr. Shaw, the statistics show that practically all portions of the base for me to attempt to state how in the evening when gas swas turned on both think in Chicago it has cut very much figure.

Mr. FORSTALL—Well, Mr. Shaw, the statistics show that practically all portions of the beat was cut in all parts of my house repeatedly in the weening when gas yes turned on both think in Chicago it has cut very much figure.

Mr. FORSTALL—Well, Mr. Shaw, the statistics show that practically all portions of the beat successive in the gas very much figure.

Mr. SKINNER—I mean upon the company appliances.

Mr. SHAW—That was what I have in the gas run and at the jet with full head. It is

Distance From City. Mr. TAYLOR-How far is Takoma Park from the main plant of the com-

discovered at the time an explor; in would have in all probability taken place, with serious results, as the family was gathered around the stove waiting dinner. Here is a letter from Mr. Morrison,

who has charge of one of the division of the bureau of plant industry, which he says: The flow of gas is poor, having gone out more than once in my range. Cooking with gas is almost impossible at times. I would like to know whether the gas com-pany could be held responsible, or rather, liable, for any damages resulting from an explosion due to above.

the tremendous number of something the to ask gentlerans who has just been speakgentlerans who has j

fact out, because we want enough gas out there to cook and to read by, and out there to cook and to read by, and we do not want our property and lives endangered. I have incorporated all these excerpts from all these letters in a report which I sent to the commissioners of the District of Columbia. In that report I made the suggestion that the gas pressure be limited to one inch, and it is upon that report that the commissioners have based their recommissioners have based their recom-

missioners have based their recom-mendations to this committee.

Mr. TAYLOR—This bill that is now pending before the committee? Makes Further Recommendation.

Makes Further Recommendation.

Mr. LE CLERC—Yes, the bill that is pending before the committee. Nobody had thought of making any recommendations to this committee on the gas pressure. I would like to make one further than the last year it has built a policy of some further than the last year it has built a policy of some three than the last year it has built a policy of some three than the last year it has built a policy of some three than the last year it has built a policy of some three than the last year it has built a policy of some three than the last year it has built a policy of some three than the last year it has built a policy of some three than the last year it has built a policy of some three than the last year it has built a policy of some three than the last year it has built a policy of some three than the last year it has built a policy of the last pressure. I would like to make one further recommendation, and that is, that the gas pressure be not only limited to a minimum of 1 inch, but that we be given sufficient gas, so that at least 5 cubic feet per hour will pass through a standard burner, and that when 5 cubic feet per hour passes through a standard standard burner, and that when 5 cubic feet per hour passes through a standard standard burner, and that when 5 cubic standard burner, and that is, that holder, at an expense of some three hundred thousand dollars, to supply a pressure at that outlying section, recognizing that the present mains are inadequate. That will be in commission in a very little while, probably in the next

Mr. GOLDSBOROUGH—I know, but it is weakest:

Mr. GOLDSBOROUGH—In the Mr. LE CLERC—At 'Anth and D square. The test could be made at the gas lamps without any difficulty, and

GOLDSBOROUGH - Are you far country.

I asked him that question to bring that an unstopped flute, but little air would reach the end. Feeding Thousands of Homes.

The main is feeding thousands of houses before it gets there, and the sup-In ply is partially exhausted, and the main is not large enough, or there is a greater demand there than it will accommodate. They put a booster there some time ago in the hope that that would do it, but it did not prove sufficient to remedy the evil, to meet the

A therefore, mave to be, for comparing the state of the s

built up in that neighborhood this very minute, and it seems to me that they would look from their own financial standpoint and provide a main that would supply not only 1 inch but a main that would supply the same pressure as down town.

Pressure Downtown.

Pressure Downtown.

Pressure Downtown.

Pressure Downtown.

Pressure Downtown.

Pressure Downtown.

Pressure Downtown. the evil very much better than requir-ing a particular pressure to be main-tained in each individual house or each individual meter.
Mr. TAYLOR-Yes, but where would

Mr. LE CLERC-I mean downtown.

Mr. GOLDSBOROUGH-I know, but it is weakest?

Mr. LE CLERC-At 'Cont.

Mr. GOLDSBOROUGH—You do not understand me. This bill provides that a certain pressure shall be maintained, not in the street, but at the meters.

Mr. LE CLERC—No; at Takoma Park.

Mr. GOLDSBOROUGH—That is a different proposition entirely from the one you speak of.

Mr. LE CLERC—Mr. Chairman, you should amend that bill so that we shall get a minimum pressure at Takoma get a minimum get get get deal of loss, which, in the end, comes on the consumers. It is an economic condition, and therefore the provision ought to be a reasonable requirement of pressure in the mains in front of the houses in every square, and I do not think that such a provision will be antagonized in any wise by the comes on the consumers. It is an economic condition, and therefore the provi

Ing constructed now?
Mr. GOLDSBOROUGH—Yes, sir.
Mr. TAYLOR—For the sole purpose of taking care of this pressure?
Mr. GOLDSBOROUGH—Yes, for the reinforcement of the gas supply in that

Mr. GOLDSBOROUGH — Are you through?

Mr. LE CLERC—I am through with my statement; yes, sir.

Mr. GOLDSBOROUGH—I did not intend to make any statement here today, but on behalf of the company i will say the say and is, I may say, a credit to the latest engineering development of the latest engineering development of the latest engineering development.

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DINING CHAIRS

Special 47

the statistics. Dr. HAYWOOD—And yet this is signed by every the board of health of Mrs. Schibbert of the board of health of Mrs. Schibbert of carbureted gas. Mr. FORSTALL—Their statistics allow in the number of meters a deaths from gas poisoning before the advent of carbureted gas. Mr. SKINNER—I would like to ask a question. You have testified as to the deaths from trolley accidents and others, is it not a fact that the speed of trolley. Mr. FORSTALL—There are testified as to the deaths from trolley accidents and others, is it not a fact that the speed of trolley. Mr. FORSTALL—There is a listence of trolley accidents and others, is thought not constructed gas. Mr. FORSTALL—There is the testified as to the deaths from trolley accidents and others, is the not a fact that the speed of trolley. Mr. FORSTALL—There is minit? Mr. FORSTALL—There are the immit? Mr. FORSTALL—There are the testified as to the deaths from trolley accidents and others, is that the speed of trolley accidents and others, is the not a fact that the speed of trolley accidents and others, is the not a fact that the speed of trolley accidents and others, is the not a fact that the speed of trolley accidents and others, is the not a fact that the speed of trolley accidents and others, is the not a fact that the speed of trolley accidents and others. Mr. FORSTALL—There statistics show it. The company has the last year of the second period, and list, which was not the population, nor when the next day he went downstairs and was on the point of striking a match and entering the room of the said that fine the rould be cortected by a larger of the send that it such a could be cortected by a larger of the school of the downstairs and was on the point of striking a match and entering the room of the said that fine the rould be cortected by a larger of the school of the downstairs and was on the point of the could be corted by a larger of the school of the downstairs and was on the point of the could be corted by a larger of the school of the do We Challenge the World

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